

CLAIMS:

1. A liquid epoxy resin composition comprising

(A) a liquid epoxy resin,

5 (C) a curing accelerator,

(D) an inorganic filler, and

(E) acrylic particles of core-shell structure formed of polymers or copolymers comprising an alkyl acrylate or alkyl methacrylate or both as a monomeric component, the  
10 core having a glass transition temperature of up to  $-10^{\circ}\text{C}$ , the shell having a glass transition temperature of 80 to  $150^{\circ}\text{C}$ , the particles having an average particle size of 0.1 to  $1.0\text{ }\mu\text{m}$ ,

said acrylic particles (E) being present in an amount  
15 of 0.5 to 20 parts by weight per 100 parts by weight of the liquid epoxy resin (A).

2. A liquid epoxy resin composition comprising

(A) a liquid epoxy resin,

20 (B) a curing agent,

(C) a curing accelerator,

(D) an inorganic filler, and

(E) acrylic particles of core-shell structure formed of polymers or copolymers comprising an alkyl acrylate or  
25 alkyl methacrylate or both as a monomeric component, the core having a glass transition temperature of up to  $-10^{\circ}\text{C}$ , the shell having a glass transition temperature of 80 to  $150^{\circ}\text{C}$ , the particles having an average particle size of 0.1 to  $1.0\text{ }\mu\text{m}$ ,

30 said acrylic particles (E) being present in an amount of 0.5 to 20 parts by weight per 100 parts by weight of the liquid epoxy resin (A) and the curing agent (B) combined.

3. The composition of claim 1 wherein the acrylic particles (E) are compounded in the composition by previously dispersing them uniformly in the liquid epoxy resin (A).

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4. The composition of claim 1 wherein the acrylic particles (E) bear on surfaces functional groups which are carboxyl, epoxy or hydroxyl groups.

10 5. The composition of claim 1 wherein the curing accelerator (C) is at least one of imidazole compounds and organophosphorus compounds.

15 6. The composition of claim 5 wherein the curing accelerator (C) is comprised of catalyzed microcapsules containing at least one of imidazole compounds and organophosphorus compounds and having an average particle size of 0.5 to 15  $\mu\text{m}$ , the quantity of the catalyst leached out from the microcapsules in o-cresol at 30°C for 15  
20 minutes being at least 70% by weight of the entire catalyst quantity in the microcapsules.

25 7. The composition of claim 5 wherein the imidazole compound is selected from the group consisting of 2-methylimidazole, 2-ethylimidazole, 1,2-dimethylimidazole, 1,2-diethylimidazole, 2-ethyl-4-methylimidazole, 2-undecylimidazole, 2-heptadecylimidazole, 2-phenylimidazole, 1-benzyl-2-methylimidazole, 1-benzyl-2-phenylimidazole, 1-cyanoethyl-2-undecylimidazole, 1-benzyl-2-methylimidazole,  
30 2,4-diamino-6-[2'-methylimidazolyl-(1)']-ethyl-S-triazine, 2,4-diamino-6-[2'-ethyl-4'-methylimidazolyl-(1)']-ethyl-S-triazine, 2,4-diamino-6-[2'-undecylimidazolyl]-ethyl-S-triazine, 2-phenyl-4-methyl-5-hydroxymethylimidazole, 2-phenyl-4,5-dihydroxymethylimidazole, and 2-aryl-4,5-  
35 diphenylimidazole.

8. The composition of claim 7 wherein the imidazole compound is selected from the group consisting of 2-ethyl-4-methylimidazole, 2-undecylimidazole, 2-phenyl-4-methyl-5-hydroxymethylimidazole, and 2-phenyl-4,5-dihydroxymethyl-  
5 imidazole.

9. The composition of claim 1 which is used in the sealing of flip chip type semiconductor devices.

10 10. A semiconductor device which is sealed with the liquid epoxy resin composition of claim 1 in the cured state.

11. The semiconductor device of claim 10 which is of the flip chip type.